

**Sample Pre-calculus Skills Assessment**

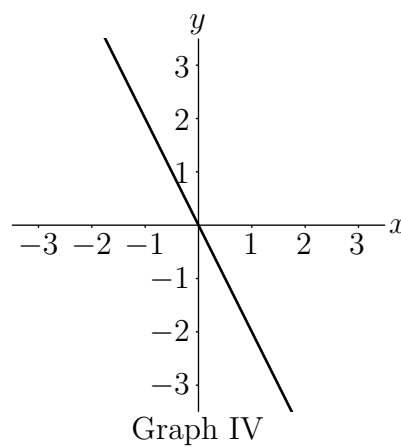
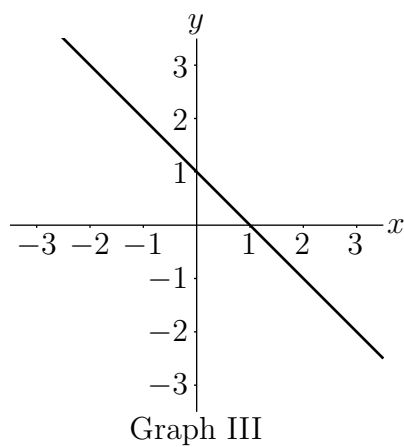
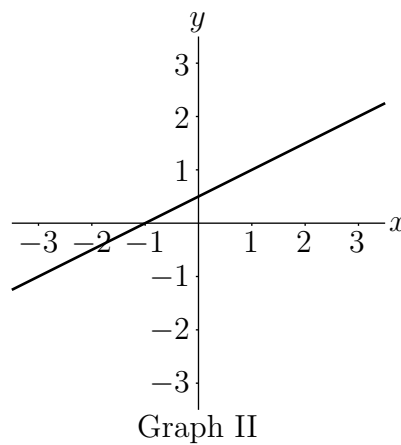
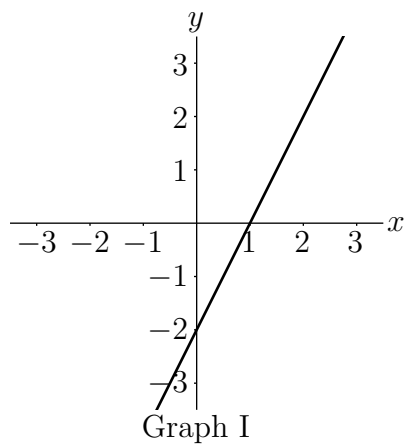
Instructions: These questions below are very similar to the questions you'll find in the on-line pre-calculus self-assessment test.

1. Consider the function  $f$  given by  $f(x) = x^2 - 3x + 4$ .  
Find the value of  $f(-5)$ .

2. Find the slope of the line containing the points  $(2, 4)$  and  $(5, -1)$ .

3. If  $5x + 6y = 3$  and  $2x - y = 8$ , find the value of  $x$ .

4. Here are graphs of four lines:



Match each of the following equations to one of the graphs:

(a)  $2x + y = 0$

(c)  $y = 2x - 2$

(b)  $2y - x = 1$

(d)  $x + y = 1$

5. Decide whether each of the following equations is true or false.

(a)  $x^2 - 3x - 2 = (x - 2)(x - 1)$  for all  $x$

(b)  $(x + 4)^2 = x^2 + 4x + 16$  for all  $x$

(c)  $x^2 - 2x + 1 = (x - 1)^2$  for all  $x$

(d)  $x^2 - 9 = (x - 3)^2$  for all  $x$

6. Decide whether each of the following equations is true or false.

(a)  $\frac{3x^2 + 2x}{2x} = 3x^2$  for  $x \neq 0$

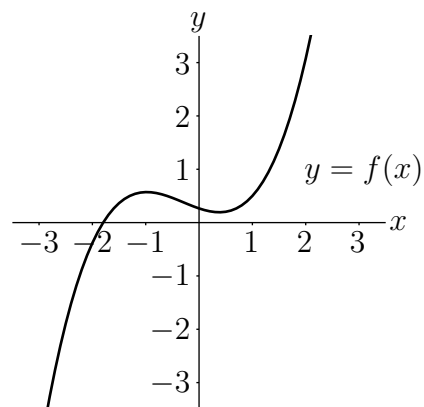
(b)  $\frac{2x^2 + 4x}{6x} = \frac{1}{3}(x + 2)$  for  $x \neq 0$

(c)  $\frac{\sqrt{18x^5}}{\sqrt{2x}} = 3x^2$  for  $x > 0$

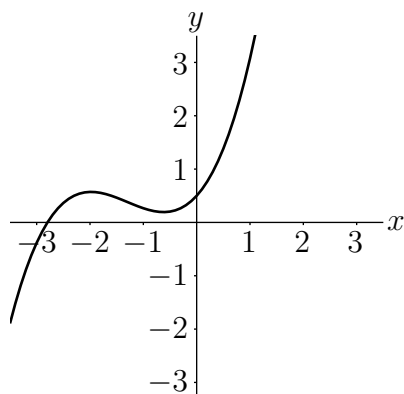
(d)  $\frac{e^{2x} + 5e^x}{e^{2x}} + 2 = 3 + \frac{5}{e^x}$  for all  $x$

7. Given that  $x = \frac{5}{2}$ , write  $x^{-3}$  as a fraction in lowest terms.

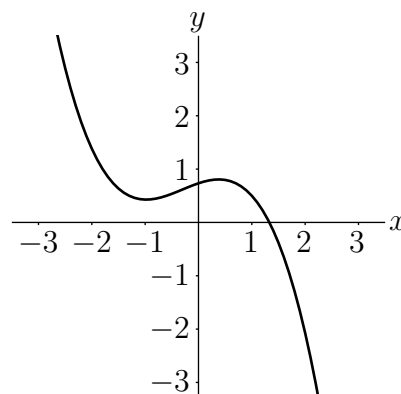
8. The graph at right shows the curve  $y = f(x)$  for some function  $f$ .



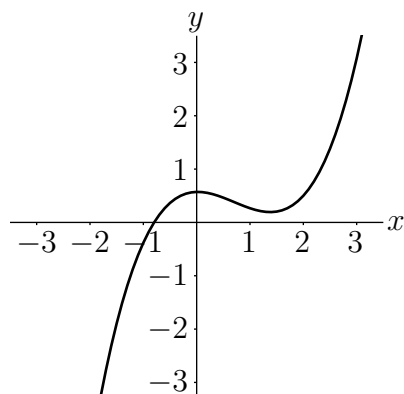
Which of the four graphs below shows the curve  $y = f(x - 1)$ ?



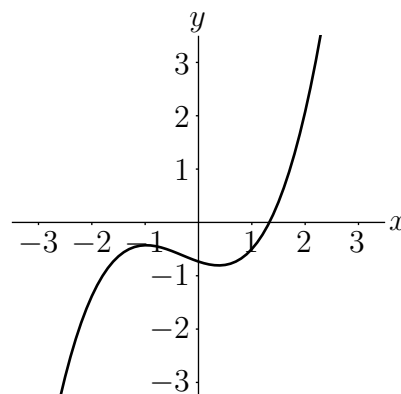
Graph I



Graph II



Graph III



Graph IV

9. Let  $f(x) = x^2 - 4$  and  $g(x) = 2x + 1$ . Find an expression for  $f(g(x))$ .

10. Suppose  $\log(x) = 9$ . What is the value of  $\log(x\sqrt{x})$ ?